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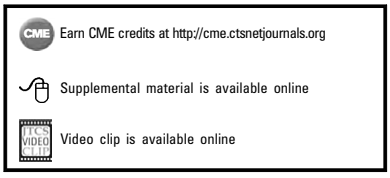

Cover Photographs

Left: From *Results of Mitral Valve Annuloplasty With a Standard-Sized Posterior Band: Is Measuring Important?* By reducing the mitral valve annulus and orifice area, annuloplasty increases the zone of coaptation of the anterior and posterior leaflets. Also, annuloplasty reinforces posterior leaflet repair and prevents future annular dilatation. As shown in this figure, after all necessary mitral valve leaflet repairs are performed, a standard unmeasured annuloplasty band, featuring a flexible 63-mm partial ring, is sutured to the posterior annulus from trigone to trigone. Most often, 7 to 9 mattress sutures of 2-0 polyethylene terephthalate sutures are used. By permission of Mayo Foundation for Medical Education and Research. All rights reserved.

Center: From *Association of Electrostimulation With Cell Transplantation in Ischemic Heart Disease*. Cross and longitudinal section of multinucleated myotubes (marked with 4′,6-diamidino-2-phenylindole dye) developed in the myocardial infracted area after treatment with skeletal myoblasts associated with chronic electrostimulation (original magnification, ×360). Until now, cell transplantation for cardiac support and regeneration was limited by poor effect in systolic function. The purpose of this study was to evaluate myogenic cell transplantation in an ischemic heart model, associated with atrial synchronized biventricular pacing. The concept of electrostimulation of homed myogenic cells (eg, skeletal myoblasts) is to transform the passive cells into active contracting cells, that is, from static cells to dynamic cells. Electrostimulation was related with enhanced expression of slow myosin and the organization of myoblasts in myotubes, which are better adapted at performing cardiac work. The most interesting and realistic perspective for cell-based local myocardial treatments seems to be the association of cell transplantation with multisite cardiac pacing to transform a passive regenerative approach into a "dynamic cellular support."

Right: From *In Situ Tissue Engineering for Tracheal Reconstruction Using a Luminar Remodeling Type of Artificial Trachea*. A new mesh-type tracheal prosthesis on which autologous tracheal tissue is encouraged to regenerate on a collagen scaffold was developed. To facilitate the early epithelialization on the luminar surface, the autologous bone marrow aspirate, mesenchymal stem cells, and peripheral blood were soaked at the implantation and evaluated in beagle dogs model. The photograph shows the luminal surface of the prosthesis 3 months after reconstruction of bone marrow aspirate group. The prosthesis was incorporated into the native tracheas and the inner surface was covered with glossy and whitish tissue. Polypropylene stents were seen in the cross section of the reconstructed tracheal wall. The results obtained in the bone marrow aspirate and MSC groups were better than those in the peripheral blood group. This tracheal prosthesis appears promising for the repair of tracheal defects, and the application of autologous bone marrow may be feasible to assist the regeneration of tracheal tissue.